U.S. Department
of Transportation

Federal Aviation
Administration

Eastern Region
Office of Regional Counsel

1 Aviation Plaza
Room 561
Jamaica, NY 11434
Telephone: 718-553-3268
Facsimile: 718-995-5699

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[redacted]

Dear [redacted]:

This letter responds to your request for a legal interpretation of "known ice" as it relates to flight operations. We construe your request as one for clarification of the meaning of "known icing conditions" as that term appears in most Airplane Flight Manuals or Pilot Operating Handbooks. The documentation for most general aviation aircraft prohibits flight into known icing conditions unless the aircraft is equipped with "anti-icing" equipment. It is important to recognize the distinction that such prohibitions concern "known icing *conditions*," and not "known icing" or "known ice."

Icing is forecast by meteorologists when conditions conducive to icing, namely, near or below freezing temperatures and moisture, exist together in a given area. When a condition of near freezing temperatures exists, an aircraft risks encountering icing in clouds, as recognized in the case *Administrator v. Curtis*, NTSB Order No. EA-5154 (Apr. 29, 2005). As applied by the Federal Aviation Administration and adopted by the National Transportation Safety Board, known icing conditions exist when a pilot knows or reasonably should have known of weather reports in which icing conditions are being reported or forecast, as the NTSB decided in the enforcement case of *Administrator v. Bowen*, 2 N.T.S.B. 940, 943 (May 22, 1974). As the NTSB recognized in the *Bowen* case, icing itself is a phenomenon that is rarely known to exist with substantial probability. The threat of ice need not cover the entire area at all altitudes for the threat to be known or dangerous, as the NTSB held in *Administrator v. Grosser*, NTSB Order No. EA-3770 (Jan. 5, 1993), nor does there need to be a near certainty that icing will occur for known icing conditions to exist. As decided in the *Bowen* case, the absence of pilot reports of actual icing does not negate the existence of known icing conditions.

Reduced to basic terms, known icing conditions exist when visible moisture or high relative humidity combines with temperatures near or below freezing. Since clouds are a form of visible moisture, flying through clouds at an altitude that is near or below freezing would constitute flight into known icing conditions.

Another factor to consider, as a practical matter, is the temperature of the aircraft exterior. When the air temperature is close to but above freezing, any part of an aircraft exterior that is below freezing may cause water droplets to freeze and ice to accumulate. When the air temperature is below freezing, any part of an aircraft exterior that is above freezing (e.g., engine cowling) may cause snow or ice crystals to melt, refreeze, and further accumulate as ice.

The Federal Aviation Regulations do not allow for experimentation. Flight into known icing conditions when the airplane flight manual or pilot operating handbook prohibits such flight would constitute a violation whether the aircraft accretes ice or not.

I trust that this response satisfactorily answers your questions. Should you have any need for clarification, please contact Stephen Brice at (718) 553-3268.

Sincerely,

for Alfred R. Johnson, Jr.

Loretta E. Alkalay
Regional Counsel

cc: Carl Kohl, FSDO EA-23